

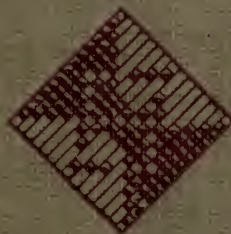
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INDUSTRIAL STUDIES & EXERCISES

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PHILIPPINE EDUCATION SERIES

INDUSTRIAL STUDIES AND EXERCISES

BY

O. S. REIMOLD

AUTHOR OF FIRST AND SECOND PRIMARY LANGUAGE BOOKS
FORMERLY A DIVISION SUPERINTENDENT OF
SCHOOLS IN THE PHILIPPINES

WITH AN INTRODUCTION BY

DAVID P. BARROWS

PROFESSOR OF EDUCATION IN THE UNIVERSITY OF CALIFORNIA
FORMERLY DIRECTOR OF EDUCATION FOR THE
PHILIPPINE ISLANDS

ILLUSTRATED



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GIFT of D. P. Barrows.

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INTRODUCTION

The following studies in industrial work are based upon the arts and industries of the Filipino peoples. Few countries can show so many kinds of attractive handiwork suitable for teaching in schools. Trees, plants, and grasses which in other countries have to be brought from afar to furnish the materials for this work here grow abundantly.

The Filipinos have two fine gifts. First, the quickness of their hands; perhaps no other people in the world learn so easily to use their hands and fingers cleverly. Second, the artistic sense; they love beautiful things — colors, patterns, and pictures — and they love to make them. This talent shows itself not only in the paintings of such great artists as Luna and Resurrección, but still more strikingly in the many beautiful articles made by humble people.

For many years, the native arts and manufactures of the Filipinos have been disappearing. There are provinces where at the time of the Spanish conquest the people made fine cotton cloths, but today do nothing of the kind. There are towns once famous for mats and baskets which no longer make them. Only three or four towns make good hats, although the demand is so large that many hundreds are brought to Manila each year from foreign countries. In getting a modern education, the Filipino boy and girl should not forget or slight the many excellent things done well by their parents and grandparents. Among these are the popular industries told about in this book.

We whose aim is education believe that it is a great good to a child to learn to make well some useful thing; to make it beautiful is an increased pleasure. We believe that the training of eye and hand obtained by learning to make a fine mat will help the child many times in after life to use his fingers skilfully and to know and love well-made things. Furthermore, we believe that the schools should encourage, in every way, the practice of "household industries," that is, industries that can be engaged in by all members of the family without leaving the home. In

many provinces, people have little to do between rice planting and harvest, and again, between harvest time and plowing. Idleness frequently leads them to do foolish and harmful things; sometimes they actually suffer want for lack of employment. To such people, household industries are most important. Were it not for the spinning and weaving of cotton cloths, the Ilokano people would not be able to make a living on their crowded and not very fertile coast.

For all these reasons the native arts and industries were chosen as subjects of study in primary schools when, in 1904, the course of study for Philippine schools was framed. Splendid teaching along these lines has already been given in all parts of the Islands. I have been in schools where every boy was wearing a buri or pandan hat which he himself had made, and in other schools where every girl had learned to embroider linen in a way to delight the purchaser of such fineries.

About two years ago, a "standard" of industrial work was announced which each child must reach to be promoted from Grade III to Grade IV. This "standard" is the ability to make well some useful, salable article and to write a little essay telling about the materials from which it is made, its manufacture, its use, and its worth. This book helps the pupil to both ends; it teaches how to make beautiful things, and it teaches how to tell about them in accurate and well-chosen language.

DAVID P. BARROWS

University of California, 1 October, 1910

To the Teacher: On each first page of a subject (see pages 5, 9, 13, and each successive fourth page) is a list of words and expressions which it is essential that every pupil should understand and be able to use correctly. Let the pupils use each word or phrase in several sentences relating to the subject under discussion. Words followed by "(n. & v.)" are used both as noun and verb—teach the use of both. Of the nouns, both singular and plural forms should be used; of the verbs, the present, past, and participle forms should be used.

ABACÁ



What is growing in this field?
 How tall are the plants?
 How do the men cut abacá?
 What is on the cart?
 Where will the man go with the cart?

stalk
 leaf
 leaves
 abacá fiber
 coarse fiber
 fine fiber

bleach
 strip (n. & v.)
 stripper
 stripping knife
 stripping machine
 baling machine

bale
 cord
 rope
 lupis
 sinamay
 pinolpog



Cut a stalk of abacá or banana plant. You will find many small threads. These small threads in the stalk are called fibers.

In abacá there are many fibers. Abacá fibers are very strong.

This man is taking the fiber out of the abacá stalk. He is stripping off all the soft

part with a smooth knife. If the knife is rough, the fiber will not be fine.

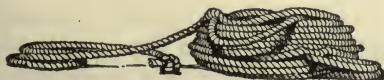
Abacá fiber makes strong twine and rope. Cord is small rope. The fisherman uses rope and cord for his nets. Much rope is used on ships. Is the rope on your flag-pole made of abacá?

Women can weave cloth from fine abacá fiber. The ladies make *camisas* of this cloth.

Very much abacá grows in the southern part of Luzon. Can you tell on what other islands abacá grows?

Much abacá is sent to America and Europe. Philippine abacá is the best in the world.

1. How does the farmer plant abacá?
 2. Why does he have trees in the field?
 3. What plant does abacá look like?
 4. What kind of leaves has abacá?
 5. How tall does abacá grow?
 6. Can we eat the abacá fruit?
 7. What part of the plant do we use?
 8. How many times a year is abacá cut?
 9. How can we tell when to cut abacá?
 10. How do the men cut abacá?
-
1. How does the man take the fiber out of the stalk?
 2. What kind of knife is best for stripping?
 3. How does the fiber look?
 4. What color is it?
 5. What can we make of strong fiber?
 6. How is rope made?
 7. For what can we use rope?
 8. What cloth can we weave of fine fiber?
 9. What can be made of the cloth?
 10. In what provinces does much abacá grow?





What is the difference between a cord and a rope? You can make all the cord and rope that you need for your industrial work. Use good fibers of abacá, maguey, or sisal. See pages 32, 36, 52, 56, 68, 88, for the uses of cord and rope.

To make a cord for weaving a net, select twenty good fibers of equal lengths. Take ten fibers in one bundle. Fasten one end of the bundle to a hook in the ceiling. Hang it so high that the other end does not touch the floor. Tie a stone or some other kind of weight to the lower end. Give the weight a spin so that it will twist the fibers. Twist the other ten fibers in the same way. Then twist the two strands into a cord.

Measure the fibers before twisting, and again after twisting. When are they longer? Why?

You can make a rope for a flag. How thick should it be? Twist three strands together. How many fibers will you need for each strand?

Rope can also be made by braiding. Learn to braid with three strands; with four strands; with six strands. Braided rope is useful for basket handles and for the soles of sandals. (See page 88.) It can also be sewed together to make mats and baskets. Very pretty braided rope can be made from raffia and grasses.

To the Teacher: Pupils should make at a time only as much cordage as their exercise requires. Read the chapters, "Braids" and "Knots and Nets."

BAMBOO



What tall plants do you see at the left?

What can you tell about them?

What are the men doing?

Of what are they building the house?

What tools do they use?

bamboo shoots

bamboo stalks

hollow stalks

trim the stalks

split the stalks

between the joints*

join two pieces

make a joint*

glue

chisel

pegs

ruler

***To the Teacher:** Make clear these meanings of the word *joint*: (1) the node of a stem; (2) the part of a stem between the nodes; (3) the union of two or more parts or things, as the bamboo joints on page 12.



Bamboo does not grow like trees. Many bamboo plants grow in one bunch. Here is a picture of a bunch of bamboo.

Young bamboo grows very fast. It is tender and good to eat.

The bamboo stalk is hollow. It is lighter than the trunk of a tree. The trunk of a tree is solid.

Can you make a cup of bamboo?

When the wind blows, the bamboo bends and shakes its slender leaves. How beautiful it looks!

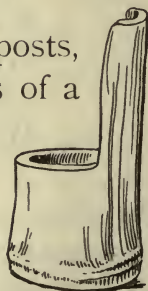
The farmer plants bamboo around his field. The carabao cannot get into the field.

The carpenter can use bamboo for posts, because it is strong. Can all the parts of a house be made of bamboo?

We can make sawali and baskets of bamboo, because it bends and is light.

The farmer makes rope of bamboo, because it bends and is strong.

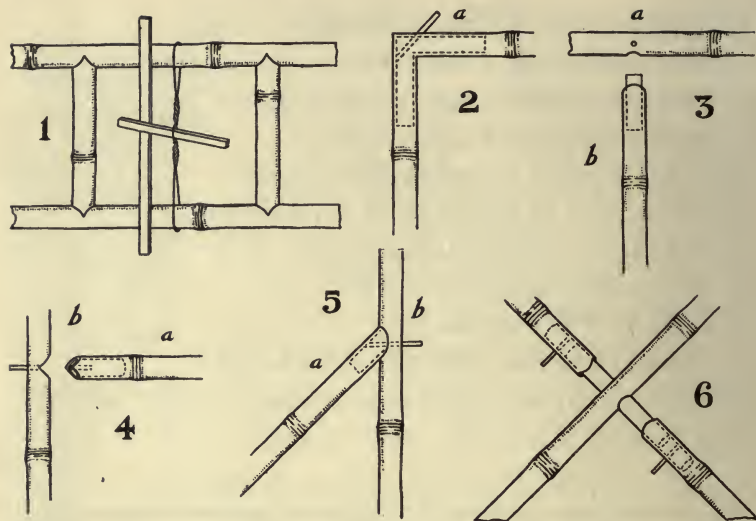
Very fine hats are made of bamboo. Bamboo hats are light and cool. In what town are many bamboo hats made?



1. Where does bamboo grow best?
2. How much will young bamboo grow in a day?
3. How long will it take to grow as tall as you?
4. How high does bamboo grow?
5. What kind of branches has bamboo?
6. What kind of leaves grow on bamboo?
7. When do people cut bamboo?
8. When must they not cut it?
9. Do ants eat bamboo?
10. How is bamboo different from a tree?
11. What kind of noise does bamboo make when it burns?



1. What part of your house is made of bamboo?
2. Name some large things at your home made of bamboo.
3. Name some small things made of bamboo.
4. What can your father make of bamboo?
5. What things made of bamboo does the fisherman use?
6. What does the farmer make of bamboo?
7. What can you make of bamboo?
8. Why do you make your kite of bamboo?
9. How much do you pay for a large bamboo stalk?



Where do the pupils in your school put their hats and umbrellas? Should you like to make an umbrella rack or a hatrack for your room? (See page 109.)

Bamboo furniture should be strong. It will be strong if all the joints are well made. The pictures above show how to make strong joints. Measure accurately. Cut the edges even. Make the two joining pieces fit well. Do not use iron nails; use wooden pegs and hot glue. Make the joints neat. See that your saw and chisel are sharp so that you can cut smooth edges.

No. 1 shows how joined pieces are held together while the glue is drying. No. 2 shows the miter joint; Nos. 3 and 4, T joints; No. 6, the diagonal joint.

To the Teacher: Read the chapter "Bamboo Work." Let the first work be simple. Do not let the pupils try to make furniture until they are able to make strong joints. Glue may be made from carabao hoofs and skins.

BASKETS, HATS, AND MATS



What is this woman weaving?
 What material does she use?
 How many hats do you see?
 What other things can she weave?
 Of what is the mat made?

weave
 weaving
 wove
 woven
 border
 design

mat weave
 web weave
 coil weave
 knot weave
 hexagonal weave
 square mat

sleeping mat
 table mat
 hand basket
 market basket
 sewing basket
 weaving materials



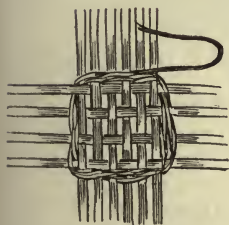
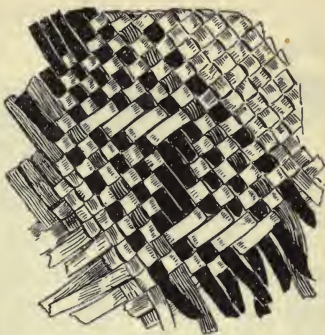
Many kinds of hats are made in the Philippines. Some hats keep off the rain, and others are made to wear in the sun. How many kinds of hats do you see in the picture?

In Baliwag hats are made of bamboo. The people of Lukban make fine hats of buntal. Sabutan makes very good hats.

Baskets are very useful, and we should learn to make them. Many of them have beautiful shapes. Sometimes baskets have pretty colors, too. Strong baskets are made of bejuco, bamboo, or buri.

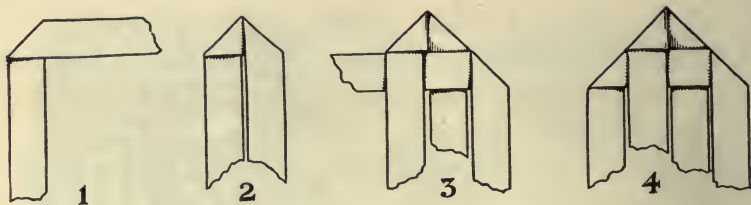


1. What kinds of mats are made in your province?
2. Of what material are these mats made?
3. What color are they?
4. What are these mats used for?
5. Draw a design for a mat.
6. Beautiful mats are made in the Romblon Islands. Can you tell some other places where fine mats are made?



1. What part of the basket do you weave first?
 2. What do you make last?
 3. What baskets are made of bamboo?
 4. What baskets are made of bejuco?
 5. What other materials are used to make baskets?
 6. Tell the use of each basket in the picture.
1. Can you make a bamboo hat?
 2. How do you get the bamboo?
 3. How do you split it for weaving?
 4. How do you soften the bamboo?
 5. What part of the hat do you weave first?
 6. How many kinds of material are used to make hats?
 7. Which hat in the picture do you like best?





In weaving a mat, it is important to turn the corners correctly and accurately. The pictures show how to make correct turns.

Lay a strip of buri or lupis before you. With the right hand bring the upper part over to the right. Make a right angle like No. 1. Take the strip at the right and bring it over and down. Now you have the double turn shown by No. 2.

Weave in a strip as shown in No. 3. All turns on the right are made by bringing the strip over and down. All turns on the left are made by turning the strip back and then down, like No. 4.

Weave in other strips. When the edges are 20 cm long, make the double turn. Now weave until the mat is finished. What is the shape of your mat? How large is it? On page 110 you will find pictures of things that can be made of square mats and oblong mats.

To make a good mat, notice these points: use white buri; let the strips be smooth; weave the strips in straight; weave the strips closely. When a mat is well made, the edges are straight and even.

To the Teacher: See the chapter "First Exercises" for exercises on making turns; also read the chapter "Diagonal Mat-Weave." This lesson will serve as a model for a composition exercise on how to weave a mat.

THE BLACKSMITH



What is the man making?

What is the man at the right doing?

What do you call these men?

Why do they need the fire?

Tell the names of the things that you
see in this place.

metal
iron
steel
tin
brass
copper

gold and silver
metal worker
coppersmith
tinsmith
silversmith
goldsmith

blow the fire
heat the iron
red hot
cool the iron
bend the iron
bent the wire



I like to visit the blacksmith's shop and see the blacksmith work.

A fire is burning in the forge. The blacksmith puts the iron into the fire. See how the fire burns! I like to see the man blow the fire.

The blacksmith takes the hot iron out of the fire with the tongs. How pretty the red iron looks!

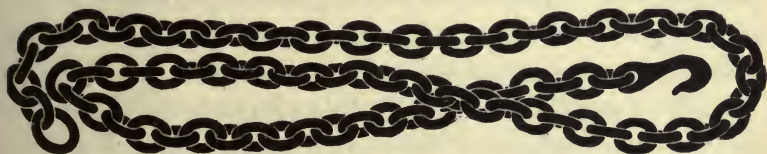
He puts the iron on the anvil and strikes it with a heavy hammer. See the sparks fly! Hear the anvil ring!

The blacksmith is making a bolo. He hammers the hot iron flat. He will sharpen the bolo and put a handle on it.

The blacksmith will sell the bolo. He can buy food and clothes with the money.

Who will buy the bolo?

1. Of what does the blacksmith make a bolo?
2. Can he make a bolo of cold iron?
3. How can he make the iron soft?
4. How does he make the fire burn?
5. How does he know when the iron is soft?
6. How does he hold the hot iron?
7. How does he shape the iron into a bolo?
8. Why does the blacksmith make bolos?
9. What does the carpenter give him for a bolo?
10. What does the blacksmith do with the money?



1. Draw pictures of three objects shown in the picture on page 2.
2. Write four sentences. In each sentence tell what the blacksmith does with one of these tools:

anvil

tongs

hammer

forge

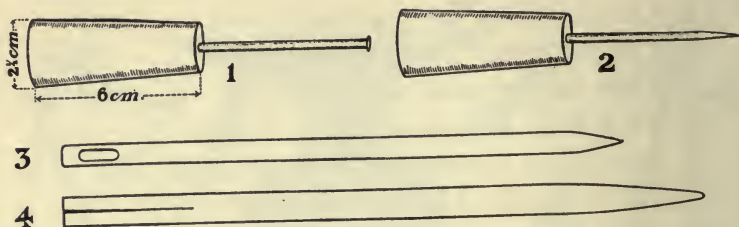
3. Write four sentences. In each sentence tell what these things are used for:

anchor

spear

bolo

chain



For your industrial work, you need these tools: knife, scissors, ruler, awl, large and small needles, and bamboo needles. You can make most of your own tools yourself.

Make an awl from a nail. Shape a wooden handle as No. 1 shows. Make it 6 cm long and 2.5 cm wide at the widest part. Drive a nail into the handle. File off the nail head and sharpen the nail, as shown in No. 2.

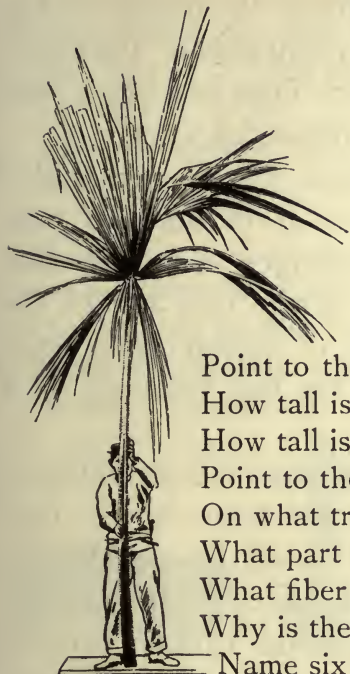
Make a needle from a nail. File off the head. Hammer the nail flat and file it till it is thin enough. Punch a hole in one end. No. 3 shows the shape and size of the needle.

A bamboo needle is needed for weaving colored buri into mats. Cut a thin piece of bamboo into a shape like No. 4. The split at one end will hold the colored buri.

Directions for making a meter measure are given on page 60. In the same manner make a decimeter measure. Divide the decimeter into ten centimeters. Divide the centimeters into millimeters.

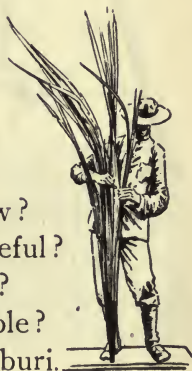
You cannot make a knife or scissors. These tools are made of hard steel. However, you can keep them sharp by using a whetstone. Some whetstones are used dry. On some whetstones water is used, on others, oil.

BURI



Point to the leaf.
 How tall is the leaf?
 How tall is the petiole?
 Point to the leaf bud.
 On what tree do they grow?
 What part of the leaf is useful?
 What fiber does it contain?
 Why is the leaf bud valuable?

Name six things made of buri.



rice water
 boiling water
 leaf bud
 petiole
 midrib
 buri fiber
 buntal
 buri raffia

extract
 prepare
 soak
 boil
 rinse
 bleach
 vinegar
 sour

dye (n. & v.)
 dyeing
 dyed
 color
 sibucaos
 mangrove
 dilao
 cili



Buri grows in nearly every part of the Philippines. Buri fiber is used more than any other kind in school industrial work.

The fiber, commonly called buri, comes from the leaf bud. Buri is stronger and finer than pandan. White buri makes the best kind of cheap hats. See page III for the weaving of a buri hat.

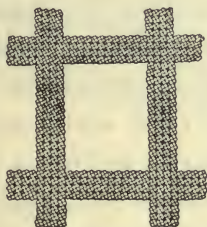
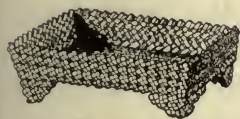
A soft fiber, which resembles a material called raffia, is made from buri. Buri raffia can be woven in a small loom. It also makes attractive mats and baskets.

The midribs of the leaf bud can be used as spokes in basket weaving. Bejuco and bamboo, however, make stronger spokes.

The valuable buntal fiber is found in the petiole, or stem, of the buri leaf. The man in the picture is pulling buntal from a leaf stem. Few people know how to extract buntal. More people should learn how to do it. Have you tried it?

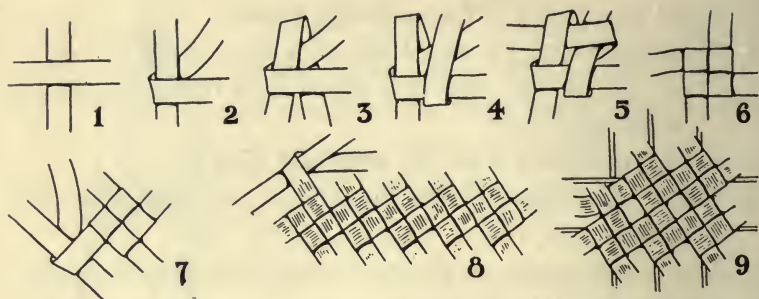
Most of the buntal comes from Tayabas province. Buntal is woven into fine hats. It is also used for cigarette cases and fine baskets.

1. How tall do buri trees usually grow?
2. How often does a new leaf grow on a tree?
3. How tall is the leaf bud when it is ready to cut for weaving fiber?
4. What materials does the leaf bud give?
5. Name the uses of the buri fiber, the midribs, and raffia.
6. From what part of the buri plant does buntal come?
7. Why is buntal valuable?
8. Can any one in your town weave a buntal hat?
9. From what province do most of the buntal hats come?



Prepare and bleach buri for your own use. Make it as white as you can. Write a composition on "How to Prepare Buri." Write about these things: (1) collecting leaf bud; (2) separating parts of bud; (3) stripping from the midrib; (4) boiling; (5) drying; (6) soaking in rice water; (7) drying; (8) making smooth; (9) rolling; (10) stripping.

Be sure to tell how long to boil the buri; what you put into the water to make the buri white; how long to dry it before rinsing; how often to rinse it.



These pictures show how the knot weave is made. Take two buri strips. Place one over the other to form right angles, as shown in No. 1. Hold these strips in your left hand. With the right hand, make the turns as shown in Nos. 2, 3, 4, 5. No. 6 shows how the knot looks when it has been pulled tight.

To make the next knot, add a new strip, as in No. 7. Make this knot as shown in Nos. 1 to 6. For each new knot, add a strip. When you begin the second row of knots, add a new strip, as in No. 8. Add a new strip for each row. Make the knots even and bring them close together.

No. 9 shows how small bamboo splints are woven into the knot weave. This makes the weave strong enough to hold its shape. Weave the splints in firmly so that they will not fall out. You must strengthen the weave with splints when you make the articles shown on page 23.

To the Teacher: Read the chapters "Materials and their Preparation" (buri), "Dyes," "Hat Weaving." There ought to be a sale among officials for knot-weave baskets in which to put letters and papers—dimensions 36 cm long, 26 cm wide, 9 cm deep.

THE CARPENTER



What do you call these men?
 What materials are they using?
 Who made the boards?
 What tools are these men using?
 What things can they make?

workshop
 workbench
 tool box
 sawhorse
 hardware
 try-square

saw (n. & v.)
 rip saw
 crosscut saw
 backsaw
 miter box
 mallet

hammer (n. & v.)
 screw
 screw-driver
 bit
 brace
 plane (n. & v.)



The carpenters are building a house. First they dig holes in the ground and put in the posts. The posts are very strong.

On top of the posts they make the roof. The frame of the roof is made of bamboo. One carpenter is putting on the cogon. Nipa also makes a good roof. Cogon and nipa keep out the hot sun and the rain.

Another carpenter is sawing a wide board. The board must be smooth. It will be used for the floor.

The carpenters will cover the sides of the house with

sawali. How do they put it on?

They will put in large windows and a door.

Light and fresh air can come through the windows. At night we should open the windows and shut the doors.

The floor is high above the ground. The carpenter will make steps of boards.

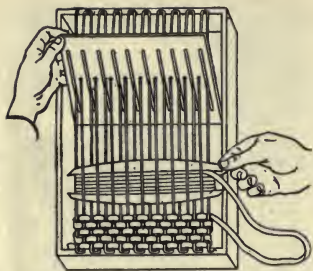
1. What things in the school-room can the carpenter make?
2. Of what is your bench made?
3. What kind of wood is it?
4. How does the carpenter make the boards smooth?
5. What does he do with the saw?
6. How does he sharpen his saw?
7. What holds the bench together?
8. How does the carpenter put in the nails?
9. What can the carpenter make for the blacksmith?
10. What can the blacksmith make for the carpenter?



1. How long is your house? How wide is it?
2. How many posts are in your house?
3. How tall are they from the ground to the roof?
4. What kind of wood are the posts?
5. With what is the roof of your house covered?
6. Count the steps from the ground to the floor.



7. Why is the floor so far from the ground?
8. Of what is the floor made?
9. With what are the sides of your house covered?
10. How many windows are in your house?
11. How many doors are there?



This picture shows how a loom can be made from a cigar box. The box should be about 14 cm by 20 cm.

On each end put a row of 19 pins 5 mm apart. These pins hold the warp threads.

From the cover of the cigar box make the heddle. The heddle is used to raise and lower the warp threads. Make the heddle 11.5 cm long and 7 cm wide.

Study the picture carefully. You see that the first warp passes through the first slit. The second warp passes through the first hole. How many slits are there? How many holes?

First make a drawing of the heddle. The slits should be 4 cm long and 3 mm wide. The holes should be 3 mm in diameter. The holes are in a row through the middle of the heddle. How far should it be from slit to hole? How far from slit to slit? Cut the edges of the slits and holes smooth.

How many heddles has the loom on page 105? Point them out.

Make a bobbin of the cigar box cover. Make it 12 cm by 5 cm. For what is the bobbin used? Use this loom for weaving fine mats. (See page 108.)



To the Teacher: The pupils should first make and use the loom as directed on page 80. Later have them make looms like the one here described but larger. See the chapter on "Textile Weaving."

THE COCONUT



What kind of trees do you see?

What grows on these trees?

Can you tell what the horses are carrying?

What is copra?

Where do you think the horses are going?

coconut grove

coconut palm

coconut milk

coconut oil

coconut wine

pack horse

husk

shell

meat

copra

fuel

burn

export

exporter

import

importer

petroleum

lamp



The boys are in a coconut grove. Pedro is climbing a tree. He will pick some coconuts and throw them down to Juan.

The coconut has a thick coat. This coat is the husk. Juan is taking off the husk.

Under the husk is the shell. When the coconut is ripe, the shell is very hard.

Juan will cut off one end of the coconut with his bolo. The coconut is full of good, sweet milk. Pedro and Juan like to drink the milk.

Pedro will take out some of the meat with his knife. The boys will eat it. They will take some coconuts home to their mother. For what can your mother use coconuts?

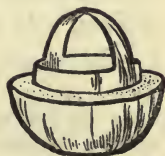
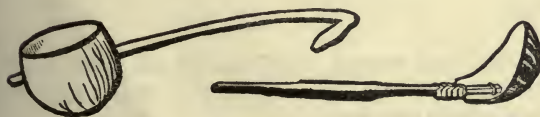
Pilar is carrying home the husks. She will burn them in the stove. Pilar will cook rice for the boys. She will take the rice from the pot with a spoon. The spoon is made of coconut shell.

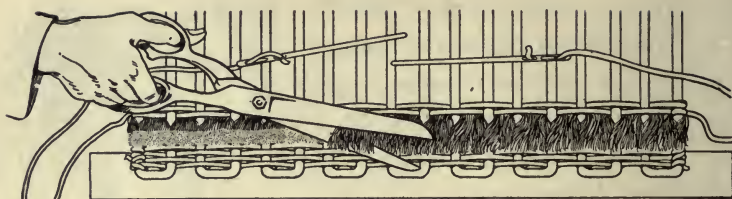
We get oil from the coconut. We can burn the oil. It gives us light at night.

1. Where does the coconut tree grow?
2. What kind of leaves has it?
3. Where do the coconuts grow?
4. How many nuts grow on a tree?
5. What shape is the nut?
6. How large is it?
7. What is outside the shell?
8. What is inside the shell?
9. How does the meat taste?
10. How much milk is in a coconut?



1. Do many coconuts grow in your province?
2. In what province are large coconut groves?
3. What is copra?
4. How can we make copra?
5. For what is it used?
6. How is coconut oil made?
7. For what can we use the oil?
8. For what can your mother use coconut milk?
9. For what is the husk used?
10. What useful thing can you make of the husk?
11. What can you make of the shell?
12. For what can we use the leaves?





Weave a small door mat. Use the bamboo loom that you have made. (See page 80.)

Warp the loom with strong twisted fiber. Thread two weaving needles with the same kind of fiber. With one needle begin to weave on the right and weave across once. Then with the other begin on the left and weave across once. In this way, weave across three times with each woof thread.

Weave a bundle of coconut husk fiber around each warp. Then with the needle on the right, pass around the end warp and weave across once. Do the same with the other needle. Proceed in this way, weaving a row of fiber, then two woofs.

While weaving, batten each row firmly against the weave. Trim each row of coconut fiber so that the fiber is about 2 cm deep on the mat.

Finish the mat by weaving the woof across six times. Sew a braided rope around the edge of the mat to make it firm. If the mat is well made, the coconut fibers will be thick and even.

To the Teacher: Simple loom weaving should precede this exercise. Encourage the children to make large door mats,—40 cm x 60 cm is a good size. There ought to be a ready sale for such mats.

THE FISH



Count the fish in this picture.

Where are the fish?

What are they doing?

What do fish like to eat?

Can you tell the names of these fish?

fish (n. & v.)

fishing

fished

scales

fins

gills

eggs

spawn

hatchery

sea

lake

river

jelly-fish

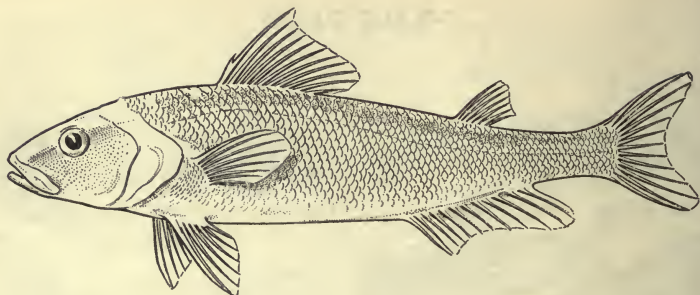
sea urchin

starfish

sponge

oyster

seaweed



The fish lives in the water. It cannot live on land.

The fish breathes with its gills. How do you breathe? Can you breathe under water?

I like to see the fish swim. It cannot walk or fly. I swim with my hands and feet. The fish swims with its fins and tail.

Count the fins on this fish. Tell where they are.

Some fish wear hard coats. These coats are of scales. The water cannot go through these coats. Have you ever seen a fish without scales?

Some fish live in the sea. They are called salt-water fish. Some of them are very large.

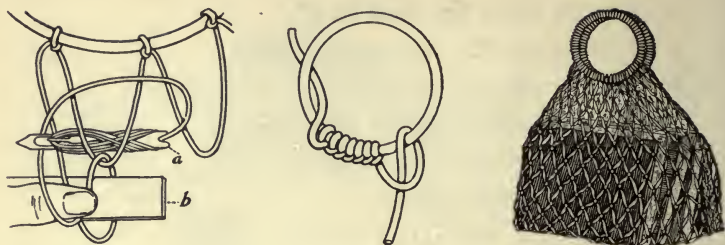
There are many small fish in rivers and lakes. We call them fresh-water fish.

Turtles, crabs, and frogs also live in water.

1. Where does the fish live?
2. How does the fish use its gills?
3. Where are the gills?
4. What is the color of the gills?
5. How does the fish swim?
6. Where are the fins?
7. What fish has large scales?
8. What fish has no scales?
9. What does the fish eat?
10. How does the fish get its food?
11. What other animals live in water?



1. Is your town on a river or on the sea?
2. What kind of fish can you buy in your market?
3. How much do you pay for a large fish?
4. How large was the largest fish you ever saw?
5. What kind of fish was it? What color was this fish?
6. Write the names of some fresh-water fish.
7. Name some salt-water fish.
8. Give the names of some big fish.
9. Name some little fish.
10. What fish do you like best?



Fishermen and hunters use nets to catch game. Nets can be put to other uses as well.

The only tools necessary are the bobbin (*a*) and the mesh stick (*b*). Both may be made of bamboo, but hard wood is better. Abacá or maguey can be used for strong nets with coarse meshes. For fine nets with small meshes, linen or cotton thread is best.

The first picture shows how to make a simple net knot. Other knots are shown on page 56. Be sure to make all the meshes the same size.

Make a net bag for school-books like the one in the picture above. First make two strong rings of bejuco for the handles. Cover the rings with abacá, raffia, lupis, or thin strips of bejuco, as shown in the second picture. Begin your net by tying the cords on the rings.

Very fine bags in which ladies may carry handkerchiefs or purses can be made of silk threads. Such bags may be lined with an inner bag of silk.

Flower-pots may be covered with nets woven of raffia or lupis. (See page 68.)

To the Teacher: Read the chapters "Braids" and "Knots and Nets." Let the pupils learn the net knot used by fishermen of their locality.

FISHING



Where are the men?
 What are they doing?
 What do they do with the net?
 What do you call these men?
 What kind of fish can they catch?

net
 dip net
 scoop net
 dragnet
 sinker
 float

pole
 line
 hook
 bait (n. & v.)
 weir
 trap

bait the hook
 set the net
 draw in the net
 dry the net
 bait basket
 fish basket



José is fishing. How still he holds his pole!

He has a fat worm on his hook. A hungry fish sees the worm. It will bite the worm.

José pulls up his line.

Poor fish, it cannot get away. José puts it into his basket. He will take it home.

The men in the boats are fishing in the sea. They have a long net between the boats. The net is under the water.

See the men pull in the net. How heavy it is! The net is full of fish. The men will put the fish into the boat and take them to market to sell.

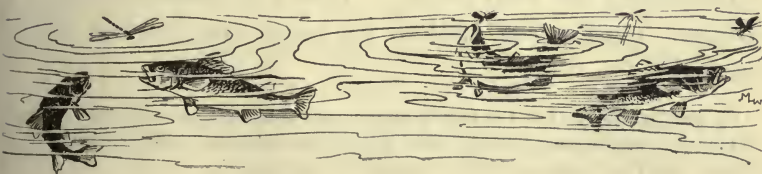
The fisherman can catch fish at night. He holds a candle in one hand. The fish like the light. They cannot see the man. The man will catch the fish in his trap.

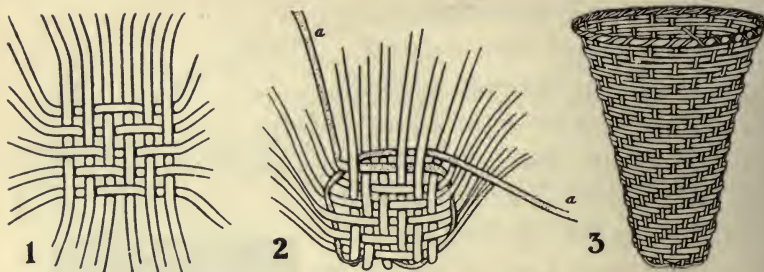


1. Where is José fishing?
2. What things does he use?
3. Of what is his pole made?
4. Why does he want a long pole?
5. Why does José put a worm on the hook?
6. What else can he use for bait?
7. Why is the hook sharp?
8. How does José know when
the fish bites the worm?
9. Why does he have a basket?
10. Why does he catch fish?



1. Where are the men fishing?
2. How do they catch fish?
3. Of what is the net made?
4. Who makes the net?
5. What makes the net go down into the water?
6. What fish can they catch in the net?
7. What fish can we catch at night?
8. Why does the man have a candle?
9. How does he catch the fish?
10. Of what is the fish-trap made?
11. What do you call a fish-trap?





Make a fish trap like No. 3. Let it be 25 cm tall, 7 cm in diameter at the small end, and 18 cm at the large end.

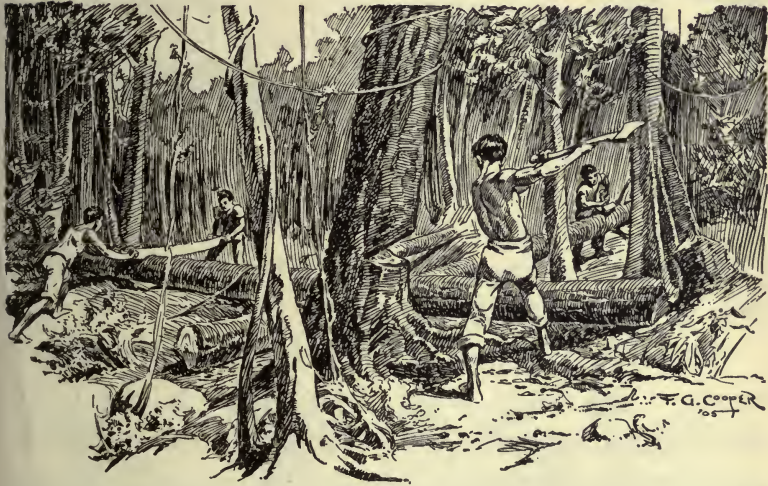
Weave it of thin bejuco strips 4 mm wide. Take 11 strips 65 cm long. Weave them in the middle, as shown in the first picture. These strips form 22 of the spokes. Add a twenty-third spoke, (*a*) No. 2. With one end of this added spoke, begin to weave, bending the spokes upward, as the second picture shows.

First weave under one spoke; then over two; then under two; then over one. After this, weave under two and over two, going round and round. Keep the spokes at equal distances apart. The distance between the spokes grows greater nearer the top. Finish the top neatly, as is shown in No. 3.

With this weave, you can make a strong and attractive wastebasket for your home. You will, however, need a greater number of spokes to make the bottom large enough.

To the Teacher: Let the pupils learn from fishermen the different weaves employed in making traps and let them apply those weaves to other practical purposes. See the chapter on "Web Weave" for applications.

THE FOREST

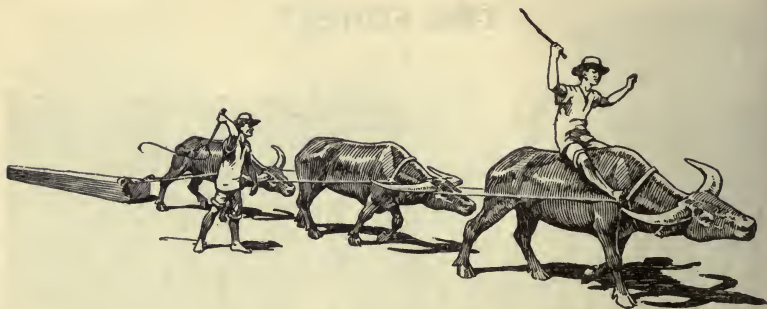


What is the man doing with the ax?
Which way will the tree fall?
What are the men doing with the saw?
How many logs do you see?
What will the men do with the logs?

tree
trunk
bark
branch
limb
twig

leaf
leaves
log
board
seedling
sapling

sawmill
woodcutter
forester
ranger
forest fire
Arbor Day



Many large trees grow in the forest. Have you ever been in a forest?

The forest is the home of birds and wild animals. The birds build their nests in the trees. The monkeys jump and play among the branches. How happy they are!

The wood-cutter cuts down the tree with a sharp ax. How the chips fly! He cuts the branches off the trunk. Then two men saw the trunk into logs. How the saw sings!

The carabaos are hauling a log to town. Count the carabaos. Is the log heavy? How can you tell?

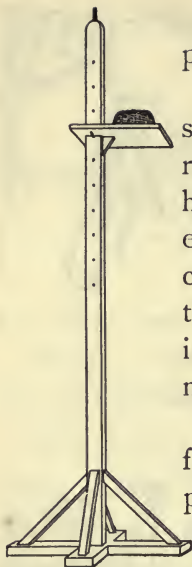
These men are sawing a log into boards. The carpenter will use the boards. He can make boxes, tables, benches, and desks of boards.



1. What is a forest?
2. Do people live in the forest?
3. What birds live in the forest?
4. What wild animals do we find there?
5. What does the wood-cutter do?
6. What tools does he use?
7. How does he take the logs to town?
8. What can be made of the logs?
9. What things in the school-room are made of boards?
10. What things at home are made of boards?



1. Is there a large forest near your town?
2. Write the names of some large trees.
3. What wood is very hard?
4. What wood makes the best posts?
5. What wood is used for doors?
6. What wood makes pretty tables?
7. What wood is used for boats?
8. Of what wood can we make canes?
9. Of what wood is your desk made?
10. What wood do the ants like to eat?
11. What wood do the ants not like to eat?



You can make a stand for The Philippine Chart or music chart.

Make the chart stand of the same dimensions and in the same way as the clothes rack on page 96. The chart stand, however, has no pegs in the upright. Trim the top edges of the upright round so that the chart will not tear. Get a large nail that fits the hole in the chart stick. Drive the nail into the top of the upright. File off the nail head.

Sometimes your teacher puts models for industrial work before the class. The picture shows how the chart stand can be made to hold these models.

The shelf for holding the models is a board about 20 cm wide, 30 cm long, and 2 cm thick. In one end of the board cut a square hole. The hole must be just large enough to let the upright pass through it easily. As the picture shows, a small three-cornered brace is fastened to the under side of the shelf. This brace is not attached to the upright. The shelf is held in place by a wooden peg, as the picture shows. The wooden peg runs through a hole in the upright and extends about 5 cm on each side. If holes are bored through the upright at different heights, the shelf can be raised and lowered. Let the holes be 10 cm apart.

The shelf should be taken off before the chart is put on the stand.

THE GARDEN



- What are these boys making?
- What is each boy doing?
- What tool is each boy using?
- What are the tools made of?
- Why is there a fence around the garden?

spade (n. & v.)

spading

hoe (n. & v.)

hoeing

rake (n. & v.)

raking

weed (n. & v.)

weeding

fertilize

fertilizer

cultivate

mulch

plant (n. & v.)

transplant

seed

fruit

vegetables

flowers



Let us make a garden. We must first turn the soil with a spade. Seeds cannot grow in hard soil.

Chop the soil fine with the hoe, Benito. Pick out the grass. Grass will kill the young plants. We shall rake the garden. Now the soil is soft and fine. We shall plant vegetable seeds.

Antonio, make a straight row with your stick. Plant some radish seeds in the row. Now cover the seeds with a little soil.



Manuel is sowing some tomato seeds. By and by he will set out the little tomato plants.

Now, boys, take care of the garden. Do not let the weeds and grass grow. Keep the soil loose and soft. Soon we shall have fresh vegetables.

1. What is a garden?
2. How do we make a garden?
3. What tools do we use?
4. Of what are the tools made?
5. Why do we turn the soil with a spade?
6. Why does the farmer plow the field?
7. Why do we pick out the grass?
8. What do we do with the rake?
9. What is the best month for making a garden?
10. Why is it the best month?
11. Draw a picture of a spade, a hoe, a rake.



1. Where do we plant seeds?
2. Where do we get the seeds?
3. What kind of seeds are the boys planting?
4. How do you plant radish seeds?
5. What part of the radish do we eat?
6. What seeds do ants eat?
7. What kind of plants do we set out?
8. What do you do when weeds and grass grow in the garden?
9. Write the names of five vegetables.
10. What vegetable do you like best?

Every yard and especially every garden should have a fence around it. This fence must be strong enough to keep out all animals and attractive enough to add beauty to the place it surrounds.

The best fence is made of trimmed wood posts and wire. Vines can be planted around the posts, and in a short time they will cover the posts and hide many of the wires. Another good fence is made by using wood posts and wood pickets. Bamboo makes poor fence posts, because it rots easily.

One school made a fence as follows: The pupils got cuttings of tangan-tangan (katumbao, in Ilokano). They planted the cuttings about 25 cm apart. Then they wove in a bamboo strip at the top and the bottom. The plants grew rapidly, and their branches formed a thick fence. When the plants were about one meter high, the tops were trimmed off square. Such a fence is called a shrub fence or hedge. Animals do not eat tangan-tangan, because its bark and leaves are poisonous. Madre de cacao may be used in place of tangan-tangan.

The hibiscus, or gumamela, with its beautiful red blossoms and thick foliage, makes a most attractive and useful hedge.

All fences and hedges must be kept in repair. Hedges should be trimmed often, in order to look well. Gates should be made of wood and should swing on wooden posts. They should be made so that they will close easily and will stay closed.

To the Teacher: Read the chapter, "Agriculture and Gardening."

THE HOME



What do you see in this picture?
 What makes this home beautiful?
 Is any one working?
 Who are playing?
 Does the baby like her horse?

yard
 well
 clean
 healthy
 filthy
 unhealthy

house
 walls
 roof
 veranda
 ceiling
 window shade

living room
 dining room
 kitchen
 bedroom
 bath room
 furniture



Antonio has a beautiful home. He loves his home and likes to keep it clean.

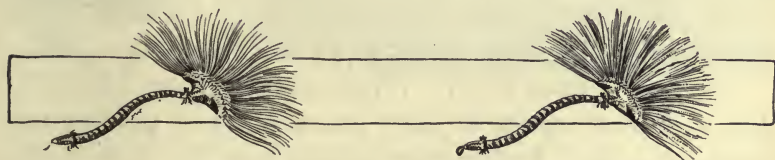
His father catches fish and sells them in the market. He brings home a big one to eat.

Antonio's mother is cooking the good, big fish. The rice is in the pot on the stove. Antonio has brought some radishes from his garden. Here comes Pilar with bread from the baker.

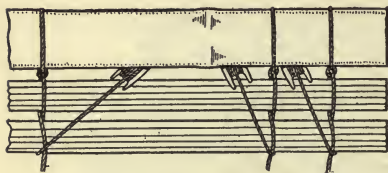
Pilar and her mother put the rice, fish, radishes, and bread on the table. Antonio calls his father to dinner.

Now they must wash the dishes. Antonio gets the hot water from the pot. Pilar plays with her baby brother. Pilar likes to help her mother. When she is older, she will go to school with Antonio.

1. How many rooms are in your house?
2. What do you call the largest room?
3. What do you do in the kitchen?
4. How do you keep the floors clean?
5. How do you keep the yard clean?
6. Why do we plant flowers in the yard?
7. How can you help your mother?
8. What do you need when you sleep?
9. Why do you boil water before you drink it?
10. With what kind of water do you wash dishes?
11. Why is it good to have trees near the house?
12. How can you help your father?



1. On what street do you live?
2. How many persons are in your family?
3. How many brothers have you?
4. How many sisters have you?
5. Write the names of your brothers and sisters.
6. Have you a baby in your home?
7. Who takes care of the baby?
8. What does your father do?
9. Who cooks your dinner?
10. What games do you play with your brothers and sisters?



Make a window shade of thin bamboo strips about 5 mm wide. Cut the strips evenly.

Measure your window.

How wide is it? Your shade should be about 10 cm wider than the window. How long will you cut your strips? How high is your window? Your shade should be about 10 cm longer.

For the top of the shade, use a strong piece of bamboo. On this piece mark the points where your weaving cords will be tied. The pair of cords nearest to each end should be about 5 cm from the end. The next pairs come about 5 cm from the end pairs. The other pairs of cords may be from 10 cm to 15 cm apart.

Use fine, strong cord. Wind each cord on a bobbin. Tie a pair of cords at each point marked on the top bamboo stick. The picture shows how the thin strips are woven in. Always pass the cords from front to back, and from back to front. Then hold the strips in place by sticking one of the bobbins of each pair of cords in the weave, as the picture shows. Pull the cords tight, so that the strips will be woven in securely. When the last strip is put in, tie the cords. The strip at the bottom should be as strong as the one at the top.

To the Teacher: Have the pupils first weave a small shade. A profitable industry of making window shades could be developed. Many bamboo shades are now imported from Japan and China. An exhibit of industrial work done in Pampanga province contains a device for weaving window shades, information about which teachers may get from the Division Superintendent of that province.

HUNTING



Why did the wild chicken fly?
 Why is the deer standing still?
 Does the deer see the man?
 What is the man doing?
 Why did he come here?

hunt
 hunter
 hunting (n. & v.)
 bow and arrow
 spear
 spearhead

gun
 shot gun
 rifle
 revolver
 ammunition
 powder

shot (n. & v.)
 cartridge
 cartridge belt
 bullet
 load a gun
 set a trap



These men are hunting wild pigs. They spread out a net in the forest. Then the men and the dogs drive the pigs into the net.

What a noise they make! The men are shouting and the dogs are barking. Some men have spears and some have bolos. They will kill the pig. Look out, boy, the pig will hurt you with its tusks.

Wild pigs are very good to eat.

This is a snare to catch a wild chicken. The chicken will come to eat the bait. How does the snare catch the chicken? Wild chickens and pigeons are good to eat.

Bad boys sometimes catch pretty song-birds with snares.

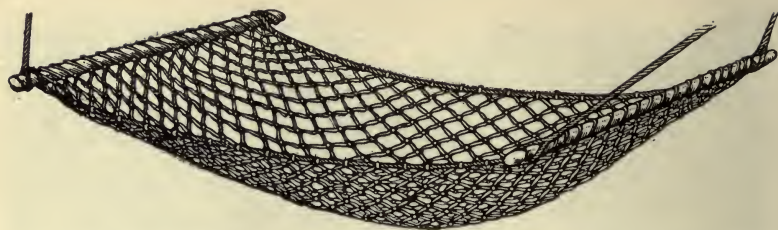




1. Name the birds in this picture.
2. Do they sing? Are they good to eat?
3. How can you catch wild chickens or pigeons?
4. How can men catch ducks?
5. Where can we find ducks?
6. In what months do we hunt ducks?
7. Have you a blow-gun?
8. Why is it wrong to kill song-birds?
9. Write the names of four song-birds.



1. Why does the man hunt wild animals?
2. What does the hunter use for hunting?
3. How does he hunt deer?
4. What can he do with the deer-skin?
5. How can he catch the wild pig?
6. What can he make of the tusks of the pig?
7. How is the wild pig different from the pig at home?
8. What other wild animals can we hunt?
9. What meat do you like best?

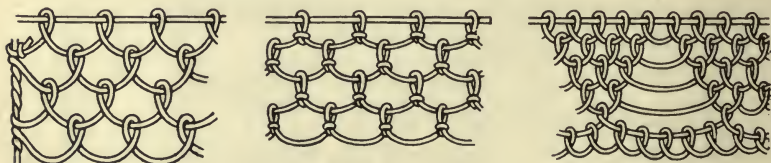


After you have learned how to make a net like that on page 36, you will be able to make a hammock.

For the end pieces of the hammock, use two pieces of wood 80 cm long, 6 cm wide, and 3 cm thick. Round the edges as the picture shows. Tie a rope about 2.25 m long at each end of one stick. These ropes form the edges of the hammock, as the picture shows.

Begin weaving the net on the stick to which the ropes are tied. Weave the first and last mesh of each row around the ropes. Weave until the hammock is long enough. Weave the last row of meshes around the second stick. Tie the ropes to the ends of this stick.

Make the weaving loose near the middle of the hammock, so that it looks as the picture shows.



To the Teacher: Read the chapter on "Knots and Nets." Simple work in net weaving should be given before the hammock is attempted. The children may use for the hammock some other knot than the one here suggested. Hammocks might be made to sell. Pupils might also be taught how to make hammocks of bejuco, the art of which some Filipinos know.

THE MARKET



Where are these people?
 What are they here for?
 Point to some one selling a fish.
 Who is buying the fish?
 What can the people buy in this market?

merchant
 license
 money
 coins
 cheap
 dear

expensive
 too expensive
 measure (n. & v.)
 dry measure
 wet measure
 ganta measure

liter
 vara-stick
 meter-stick
 scales
 weigh
 weight



These people live in the barrios. They are going to the market. The fisherman has a basket of fish. What are the women carrying? What is the man carrying in his two baskets?

Felisa is going to the market. She will buy some things for dinner. Her mother gave her 40 centavos.

What a noisy place the market is! Everybody is talking. Some are selling and some are buying.

Felisa sees a big fish. The fisherman wants 20 centavos. That is too much. Felisa buys another fish for 15 centavos. She gives the man a 20-centavo piece. How much does he give Felisa?

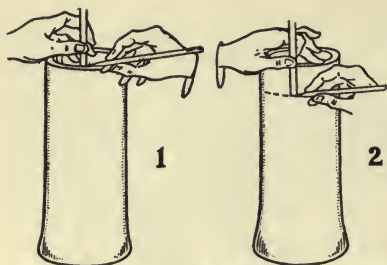
Felisa buys four eggs for 10 centavos, and she pays 5 centavos for some bananas.



1. Where are these people going?
2. What will they do with the things they are carrying in the baskets?
3. Why does the farmer take the rice to the market?
4. What will the fisherman get for his fish?
5. Why does Felisa go to the market?
6. What has she in her basket?
7. How much does she pay for a fish?
8. How much money does she spend?
9. How much money does she take home?



1. What day is market-day in your town?
2. What can you buy in your market? Name some things to eat; name some things to wear; name some things to use at home.
3. How much does a candle cost?
4. How much does a ganta of rice cost?
5. How much do you pay for a chicken?
6. What do you pay for a large jar?
7. How much petroleum can you buy for a half-peso?
8. How many bananas can you get for 5 centavos?



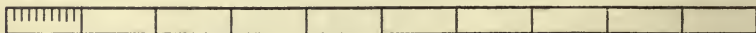
To make a liter measure, take a piece of bamboo 10 cm in diameter.

Fill a liter measure with water. Pour the water into the bamboo. With a stick, measure exactly from the top of the water to the top of the bamboo, as No. 1 shows.

Indicate this distance by several marks on the outside of the bamboo. (See No. 2.) Then draw a circle through these marks. If your measurements are accurate, this circle will show exactly where the top of the water is. Empty the water and saw off the top of the bamboo, following the circle. Now pour in a liter of water. Does the water fill the bamboo measure exactly?

In the same way, you can make other measures to hold smaller or larger quantities.

You need a meter-stick in much of your work. Take a straight piece of wood 3 cm wide and 5 mm thick. Cut it exactly 1 m long. Measure the decimeters. How many are there? Mark the dividing lines across the stick. Divide the first decimeter into centimeters. How many are there? Mark the lines half-way across the stick.



To the Teacher: Insist upon accurate measurements in these exercises. See Mercer-Bonsall's *Complete Arithmetic, Part I*, page 109, for directions for making a pair of balances.

PLAYING BALL



What are these boys playing?

How many boys are playing?

Where is the ball?

Who will catch the ball?

Why is the boy running?

team

home team

visiting team

pitcher

catcher

shortstop

first-base man

fielder

batter

umpire

home base

third base

strike (n. & v.)

foul

home run

score

champions

champion team



These boys are playing sipa. They all stand in a large circle. Pedro tosses the ball and kicks it to Maximo. See Maximo kick the ball with his heel. All the boys watch the ball. The ball must not touch the ground.

Let us go to the plaza and play ball. Where are the bats? Please give one to me. This one is too heavy. Let me have a lighter one.

Throw the ball to me, Francisco, and I will bat it. See the ball high in the air. Run, boys, run! Do not fall! Catch it, Juan!

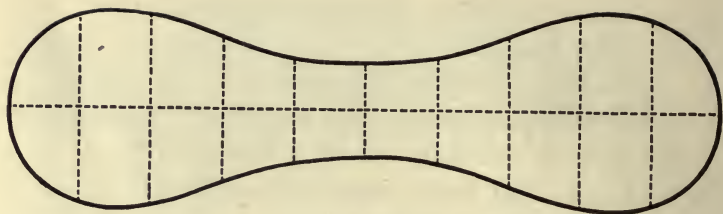
That is a good catch. Now you may bat.



1. What game are these boys playing?
2. How many boys can play this game?
3. How do you play this game?
4. Of what is the sipa ball made?
5. How is it different from a base-ball?
6. With what is the base-ball covered?
7. How can you make a ball?
8. How far can you throw a ball?
9. What can you do with a bat?
10. How long is a bat?



1. Can you play base-ball?
2. How many teams play in a game of base-ball?
3. How many boys are in a team?
4. What things do you have for playing base-ball?
5. Where does the catcher stand?
6. Why does he wear a big glove?
7. Where does the pitcher stand?
8. What does the pitcher do?
9. What does the boy do when he strikes the ball?
10. How many bases are there?



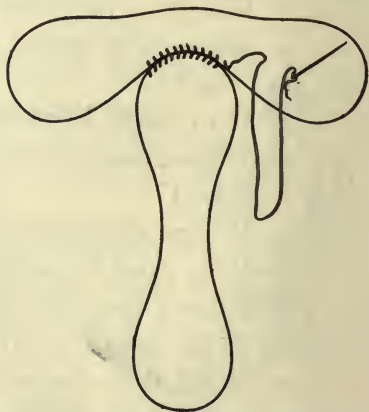
To make a base-ball cover, wind twisted abacá into a round ball, until it measures exactly 22.5 cm around.

Make the cover of two pieces of soft, strong leather. Shape each piece like the picture above, but make each one twice as long and twice as wide.

Draw a pattern of the cover piece. Make all lines twice as long as above, and all distances between lines twice as great. Measure the horizontal line. Draw it exactly 19 cm long. How far is the first vertical line from the end of the horizontal line? How far will it be in your drawing? Draw all the vertical lines. Draw the curved lines to touch the ends of all lines, as in the picture.

Cut out the pattern along the curved line. With this pattern, cut the two cover pieces from the leather.

The lower picture shows how to begin sewing the two pieces together.



THE POTTER



What are these men making?

What material do they use?

What do you call these men?

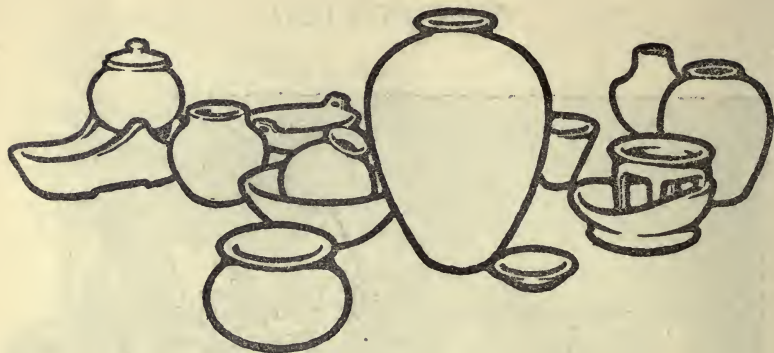
What is the boy doing?

Where is the potter's wheel?

pot
potter
pottery
mix
mold
model

flower-pot
cooking pot
water jar
clay
tile
brick

kiln
heat (n. & v.)
bake
glaze (n. & v.)
glazed
unglazed



In every house we see many pots and jars.

Jars and pots are made of clay. Clay is a kind of soil. Men dig it out of the ground. Dry clay is very hard.

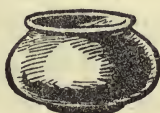
The men put water on the clay and make it soft. Then they can make the jars. A man who makes jars and pots is called a potter.

The potter puts a large piece of soft clay on the wheel. The boy turns the wheel with his foot. How fast he makes the wheel spin! The potter forms the clay with his hands, and soon he has a jar.

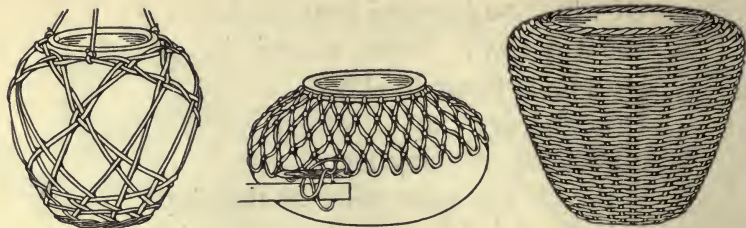
Do not touch the jar. We shall let it dry. Then we must put it over a hot fire. Tomorrow the jar will be hard.

Stoves, also, are made of clay.

1. Of what are jars and pots made?
2. What is clay? What color is it?
3. Do plants grow in clay?
4. Describe dry clay.
5. How does wet clay feel?
6. Is the jar the same color as the clay?
7. What is the difference between a jar and a pot?
8. For what are jars and pots used?
9. Why do we keep drinking-water in jars?
10. What things at home are made of clay?
11. What can you make of clay?



1. What does the potter make?
2. Why does the potter put water on the clay?
3. What else does he mix with the clay?
4. How does he make a jar?
5. How does the boy turn the wheel?
6. Why does the potter put the jar over the fire?
7. How long must the jar be over the fire?
8. How much do you pay for a small pot?
9. What does a large jar cost?
10. What do you pay for a stove?
11. How many stoves are there in the picture on page 2?



If you cannot make flower-pots of clay, you can at least beautify those that others have made.

Large open windows look very attractive with artistic pots filled with pretty plants hanging in them. Pots may be covered with an open weave of bejuco, as shown in the first picture. Probably you know some other pretty open weave to use. Grasses or lupis may also be used for this kind of weave.

Pots may have a net of raffia or abacá woven around them, as shown in the second picture. Other weaves of nets are shown on page 56. These may also be used for decorating flower-pots. The hanging ropes can be made of braided or twisted fibers.

The third picture shows a pot entirely covered with a basket weave of bejuco or bamboo. A pretty covering for a pot may be woven of bejuco and twisted grass, raffia, or sabutan. (See page 84.) Basket-covered pots may be used for holding cut flowers in water.

On page 109 is a design of a bamboo stand for flower-pots.

To the Teacher: Take up this work as soon as the pupils have learned the processes of weaving involved. Encourage the attempt to strive for artistic effects. Clay pots decorated with weaves always find a good sale.

RICE



Where are these men?
 What are they doing?
 Is the field wet or dry?
 How do you know?
 What will the farmers plant?

rice plantation	plow (n. & v.)	thresh
rice field	plowing	threshing
dike	harrow (n. & v.)	threshing machine
irrigate	harrowing	hull
irrigation	harvest (n. & v.)	hulling
irrigating ditch	harvesting	rice straw



In the rainy season the farmer plows his rice-fields. There is much water in the fields. Rice grows well in water.

See the busy workers! The rice is ripe. The men and boys are cutting rice. Benito and his little brother are in the field. The rice is nearly as tall as Benito.

Benito will carry home a bundle of rice.

Here he is hulling the rice. The chickens are eating the paddy on the ground.

Benito's mother will cook the rice for supper. After supper Benito will go to bed. Tomorrow he will go to the field to cut more rice.

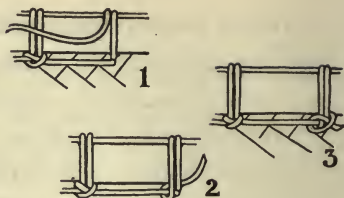
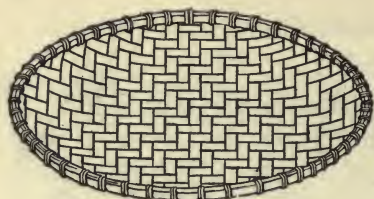


1. When does the farmer plant rice?
2. Why does he plow the field?
3. Does the carabao like to plow in the wet field?
4. How does the farmer plant rice?
5. How tall does rice grow?
6. What color is the field when
the rice is ripe?
7. How do farmers cut rice?
8. What is the color of palay?
9. How do we hull the rice?
10. What is the color of rice?
11. How does your mother cook
the rice?



1. Does rice grow in your province?
2. In what province does much rice grow?
3. In what months does the farmer plant rice?
4. Why does he plant rice in these months?
5. In what months does he cut rice?
6. What insect eats rice?
7. How can we keep away the insects?
8. How much do you pay for a ganta of rice?
9. How much does the merchant get for a picul of rice?
10. When is rice cheap?
11. When is rice dear?





For what is a winnowing basket used? Small winnowing baskets make pretty card trays. They also serve to hold collar and sleeve buttons and pins.

Make a small winnowing basket about 20 cm in diameter. Weave it of thin, narrow strips of bejuco or bamboo. Follow the pattern of the basket above.

Finish the edge neatly with a strip of bejuco. The pictures, Nos. 1, 2, and 3, show how to make the knot.

The winnowing basket makes a good tray for serving refreshments. The tray must be made strong and with a flat bottom. Make a tray 35 cm in diameter.

Visit a man who owns a rice plantation. Get all the information you can about his rice crop. On page 92 are questions about a cane crop. Use these same questions in writing a report on the rice crop. Write the ten questions, substituting the word "rice" for "cane." Write an answer to each question. Let your title be "A Report of Mr. ——'s Rice Crop." Put the report into an envelope and address it to your teacher.

To the Teacher: Preliminary work in splint weaving should precede the weaving of a winnowing basket. Small well-made baskets of this type find a good market in Manila and abroad, being useful and at the same time unique. Read the part of the chapter, "Industrial Language and Composition Work," that relates to writing crop reports.

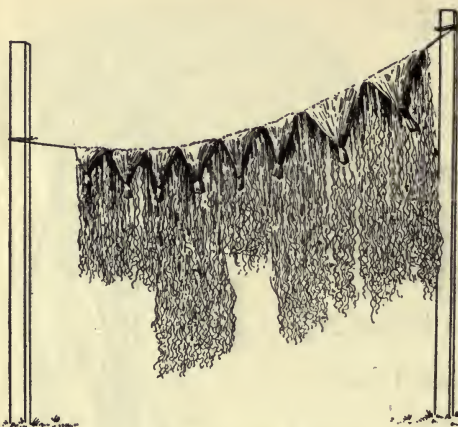
SABUTAN

What is the name of this plant?
 Like what other plant does it look?
 In what provinces does it grow?
 Does it grow in your town?
 What part of the plant is useful?
 What is sabutan fiber used for?
 What color is the fiber?
 Point to the suckers.
 Why are the suckers useful?



school garden
 suckers
 serrated edges
 sharp knife
 wilt the leaves
 strip the leaves
 fine strips
 panlinas
 dry the fiber
 smooth the fiber
 round-edged stick

weaving a hat
 hat weaving
 hat weaver
 block a hat
 hat block
 high crown
 low crown
 wide brim
 narrow brim
 Formosa hat
 Panama hat



Sabutan looks like pandan, but it does not grow so large. It grows about as tall as a man. Its leaves are finer than pandan leaves, and its fibers are stronger.

Sabutan is found in only a few provinces. Much of it grows in Laguna and Rizal provinces. Pupils in many other places are now planting sabutan in their gardens, and soon sabutan will be found in many provinces.

Can you get sabutan suckers to plant in your garden? The suckers grow around the stem of the large plant. In a year the suckers now set out will be large plants.

The fiber of sabutan leaves makes good hats. They are better than bamboo hats, because they wear longer; they are better than buntal hats, because they are cooler. Many sabutan hats might be sold in America and Europe.

Sabutan fiber also makes pretty mats and baskets.

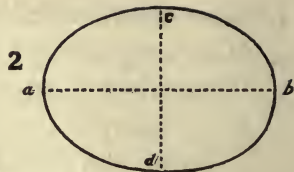
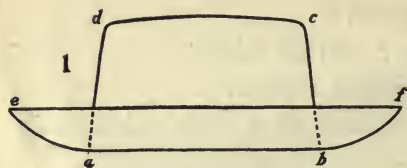
1. How tall does sabutan grow?
2. How long are the leaves? How wide?
3. What kind of edges have the leaves?
4. How many leaves can be cut at a time without injuring the plant?
5. What is the value of the fiber that one plant produces in a year?
6. How many years will a plant produce good leaves?
7. Why is sabutan better for hats than bamboo?
8. Why is a sabutan hat better than one of buntal?
9. What is the price of a fine sabutan hat?



Prepare the sabutan yourself for weaving. Write a letter to a friend telling how to prepare sabutan. Give the steps of the process in this order: (1) cutting leaves; (2) wilting in sun; (3) stripping; (4) tying into bundles; (5) soaking in cold water; (6) boiling; (7) cooling; (8) rinsing; (9) drying.

Be sure to tell how to strip the leaves; how long to soak the fiber in cool water, and how often to change the water; how long to boil; how long to rinse.

To the Teacher: Read the chapters, "Industrial Language and Composition Work" and "Materials and their Preparation" regarding the preparation of materials by the pupils and their writing out directions for such preparations.



To make fine hats to sell, the hat weaver must be very careful (1) in preparing and selecting the fibers, (2) in weaving the fibers, and (3) in getting the correct shape and proportions.

Although the fibers may be stripped evenly, they will be of different thicknesses after they are dried. Carefully select fibers of uniform thickness for each hat.

Weave the fibers evenly and closely. Make neat joints where new fibers are inserted.

The crown, $a b c d$, must fit the head. It should not be round, but shaped as No. 2 shows. The line $a b$ shows the length from the front to the back of the hat; the line $c d$ shows the width from left to right. The crown is nearly flat on top and tapers out a little toward the bottom, as No. 1 shows. The crown should be from 8 cm to 10.5 cm high; the lines $a d$ and $b c$ in No. 1 show the height of the crown.

The brim, $e a b f$, should curve up, as No. 1 shows. The lines $a e$ and $b f$ show the width of the brim, which should be from 6.5 cm to 8 cm.

On page 75 are pictures of three styles of blocking hats. No. 1 is called a telescope hat; No. 3 is called an Alpine hat; No. 2 has no special name.

To the Teacher: See the chapter on "Hat Weaving."

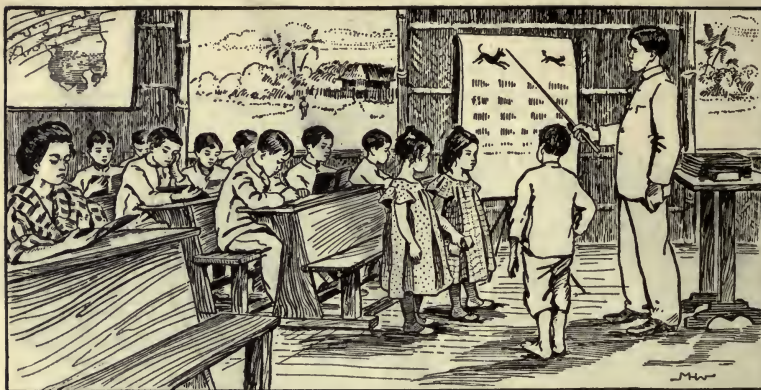
THE SCHOOL



Where are the children going?
How can you tell that this is a school?
Who is the man in the window?
Why are the boys running?
How can you tell the time of day?

Director of Education
Division Superintendent
Supervisor
Principal
Primary Teacher
Janitor

Provincial High School
Central School
Trade School
Normal School
Primary Department
Intermediate Department



The little pupils are reading the chart. Hear the little boy read, "The dog can run." The girls can read, too.

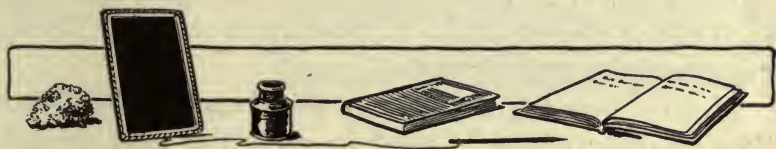
How still the room is! All the pupils are studying. Some are reading their primers, and some are writing on their slates. Soon they will recite. They like to know their lessons well.

Now it is recess. Go out and play. Run, jump, and play ball. It is good to be in the fresh air. After play you will be able to study better.

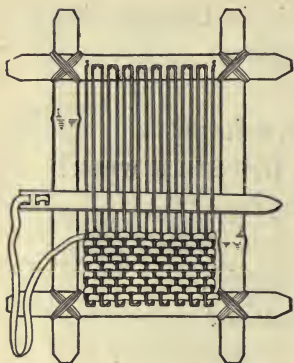
Ding-a-ling! Hear the bell! Do not crowd, boys. Let the girls go in first.

Now you may take your loom and weave a mat.

1. When does your school begin in the morning?
2. At what time do you have recess?
3. When do you go home?
4. How many hours are you in school?
5. How many school-days are there in a week?
6. What do you do on Saturday?
7. What day is to-day?
8. In what month does school begin?
9. In what month does school close?
10. How many months do you go to school?
11. Write the names of the school months.
12. What month is this?



1. How many pupils are in your school?
2. How many teachers are in this school?
3. Who is your teacher?
4. In what grade are you?
5. How many pupils are in this grade?
6. How many books have you? What do you do with your slate?
7. Write the names of your books.
8. What lessons do you have every day?
9. Which lesson do you like best?
10. Which lesson is hard for you?
11. How many years have you been going to school?



Make a loom of four bamboo sticks. Make it large enough to weave a mat 18 cm wide and 24 cm long.

How far apart should the short pieces be? The long pieces? How wide should they be?

Tie the sticks together with twisted abacá or maguey. Which pieces are laid on top, the long or the short? Make each corner a right angle. Tie the frame securely that it may hold its shape.

Put a row of 18 wooden pegs one centimeter apart on each of the shorter sticks, as the picture shows. These pegs hold the warp threads.

Make a weaving needle of a thin board or bamboo. The weaving needle is used to carry the woof thread through the warp. Make the needle about 20 cm long. The picture shows how the needle is shaped. In this loom, the needle does the work of bobbin, shuttle, heddle, and batten. Can you tell what each of these things is used for?

Use this loom for weaving the door mat of coconut-husk fiber described on page 32. You can also weave mats of raffia or cotton on this loom.

A frame for embroidery can be made of four bamboo sticks tied together as for a loom.

To the Teacher: Let the children do their elementary work in textile weaving on this loom. Read the chapter, "Textile Weaving."

SEWING



What is Paz doing?

What is she making?

What has she in her left hand?

What has she in her right hand?

What does she do with the scissors?

lace
lace making
drawn work
embroider
embroidering
embroidery

crochet
crocheting
crochet hook
knit
knitting
knitting needle

hem (n. & v.)
hemstitch
mend
cotton thread
linen thread
silk thread



Can you sew, little girls? Here are needles, thread, scissors, and some cloth.

Take a needle and some thread. Why has the needle a sharp point? Do not stick it into your finger. Find the eye of the needle. Now thread the needle.

Put a thimble on your finger. Here is a piece of cloth. We will fold one edge. Now let us sew a hem.

Hold the cloth in your left hand. Take the needle in your right hand. Push the needle through the cloth with your thimble. Make the stitches short and straight.

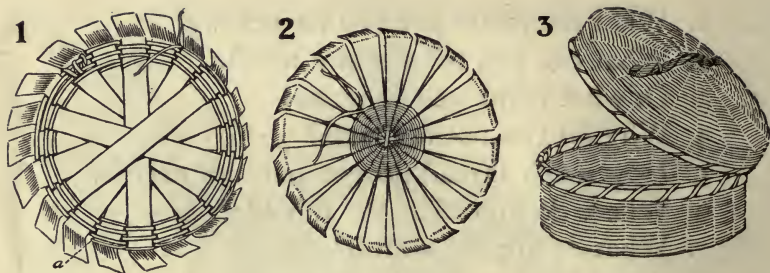
Cut the thread with the scissors. Now let us put all the things in the sewing-basket.

By and by you will know how to sew. Then you can make a camisa for your mother.

1. What things do you use for sewing?
2. What can you tell about a needle?
3. Of what is the needle made?
4. Why do you use a needle?
5. How much thread do you put in a needle?
6. Where do you wear the thimble?
7. What do you do with it?
8. What can you do with the scissors?
9. In which hand do you hold the cloth when you sew?
10. In which hand do you hold the scissors?



1. Of what is your dress made?
2. Who made your dress?
3. How did she make it?
4. What else can she make?
5. What kind of sleeves has your camisa?
6. What color is your camisa?
7. Where do you wear your pañuelo?
8. Of what is your skirt made?
9. What is the shape of your handkerchief?
10. How wide is the hem around your handkerchief?
11. Who makes your brother's coat?
12. What can your mother make for your father?



Make a sewing basket with a cover. Let the diameter be about 15 cm and the height 6 cm. For the splints use thin strips of bamboo or bejuco. Twisted grass or raffia can be used for weavers.

Start the bottom, as No. 1 shows, with 20 splints. When the splints are arranged, weave around 5 or 6 times with a single weaver to keep the splints in shape. Then double a weaver around a splint, as in No. 1, *a*. This gives two weavers. Weave round and round with the two weavers, one going under, while the other goes over, as in No. 1. Finish the top of the basket by sewing a thin strip of bejuco about 5 mm wide inside and outside the basket. Sew with bejuco.

Cut the 20 splints for the cover, as shown by No. 2. Begin weaving at the center with the double weaver. Finish the edge like the top of the basket. Be sure that the cover is a little larger than the basket, so that it will fit over the top.

The handle on the cover may be made of twisted or braided grass.

To the Teacher: Encourage weaving with grasses. Read the chapters, "Materials and their Preparation" and "Web Weave."

THE SHOEMAKER



What place do you see here?

What do you call this man?

What is he making?

What tools does he use?

What material does he use?

high shoes

low shoes

tan shoes

canvas shoes

button shoes

lace shoes

rubbers

slippers

sandals

stockings

socks

leggings

shoe polish

whiting

shoe laces

shoe buttons

button hook

shoehorn



Francisco will have a pair of new shoes. The shoemaker is measuring his foot.

Francisco wants white shoes. White shoes are light and cool. They are made of cloth.

The shoemaker makes some shoes of leather. Leather is the skin of cows and carabaos. Cow leather is the best for shoes.

The shoemaker cuts the leather with a sharp knife. When the leather is thick, he cannot use a needle. He makes holes in the leather with an awl, and puts the thread through.

The sole of the shoe is thick. The shoemaker puts on the soles with pegs.

Some shoes have soles of wood. We call them clogs. Many boys and girls wear slippers. Slippers are made of leather and cloth.

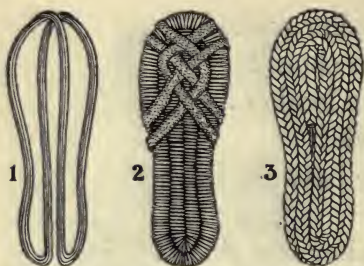
Francisco has holes in his old shoes. The shoemaker will mend them.



1. What does the shoemaker make?
2. Of what does he make shoes?
3. Where does he get the leather?
4. Of what is leather made?
5. What is the difference between leather and cloth?
6. How does the shoemaker sew thick leather?
7. Why can he not cut leather with scissors?
8. How does he put on the soles?
9. Why are the soles thick?
10. What shoes are best to wear in the rainy season?



1. Of what are clogs made?
2. Who makes clogs?
3. Where can you buy slippers?
4. What kind of shoes do you wear?
5. What color are your shoes?
6. Who made them?
7. What kind of shoes do you like best?
8. Why do you like them best?
9. What are white shoes made of?
10. How much does a pair of white shoes cost?
11. What kind of shoes do the Chinese wear?



Make a pair of sandals for yourself. Set your left foot on a piece of paper and draw a line around it; do the same with your right foot. Use these patterns in weaving your sandals.

The frame may be made of bejuco or a bundle of strong grass or lupis, as shown in No. 1. Make neat joints. Take care that the frame fits the size and shape of your foot as you have drawn it.

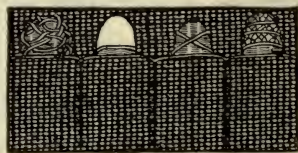
Weave twisted abacá, maguey, lupis, or grass into the frame, as in No. 2. Weave very closely so that the frame is entirely covered.

The toe straps may be made of braided abacá, maguey, lupis, or strong grass, as in No. 2. The straps are sewed to the bottom of the sandal. The toe cover may also be made of cloth or a fine net of abacá.

Cover the whole sole with braided abacá, as shown in No. 3. Begin by sewing it around the outer edge; sew it on smoothly.

The Japanese make very good sandals. Sometimes they cover the sandals with matting which makes them soft.

Here is a picture of a slipper case. Can you make one of woven abacá or raffia or of buri mats?



To the Teacher: Encourage the weaving of fine sandals, for which there ought to be a good market in every town.

SUGAR-CANE



What kind of field is this?
What are the men doing?
How do they cut sugar-cane?
Where is the man going with the cart?
What is made from sugar-cane?

refined sugar
unrefined sugar
granulated sugar
powdered sugar
brown sugar
cane syrup

recipe
batter
flour
water
eggs
bake

sweet
sweeten
cake
candy
custard
caramel



The farmers cut the sugar-cane with a bolo. They cut the long leaves off the long stalks. The man takes the stalks to the sugar-mill on the cart. Farmers keep the heads of stalks to plant.

Juan drives the carabaos round and round. The large rollers turn slowly. Pedro puts the stalks between the rollers. The sap runs out of the stalks.

The sap is very sweet. There is sugar in it. The sap runs into large pans. The men make a hot fire under the pans. When the sap boils a long time, it gets thick. The thick sap is called syrup.

The men put the syrup in jars. By and by the syrup becomes sugar. When the sugar is dry, it is put into sacks. Large boats take the sugar to the United States.

1. Describe the sugar-cane.
2. Why do we call it sugar-cane?
3. When does the farmer plant it?
4. How does he plant it?
5. When does he cut it?
6. How many times a year does he cut it?
7. How tall does cane grow?
8. What part of the plant is useful?
9. Why is it useful?
10. What is the color of the stalk?
11. What insect eats sugar-cane?



1. How do we get the sap out of the cane?
2. For what do we use the dry stalks?
3. What is the color of the sap?
4. How does it taste?
5. What is in the sap?
6. How do we get sugar out of the sap?
7. What is the color of sugar?
8. For what does your mother use sugar?
9. Where is much sugar made?
10. Where do the boats take much sugar?

Visit a man in your town who owns a cane plantation. Ask him for information about his sugar-cane crop.

Write a report of this man's sugar-cane crop. Use as a title, "A Report of Mr. ——'s Sugar-Cane Crop." Copy each question. Fill in the man's name in the blanks. Write an answer after each question. Be sure that your answers are accurate.

1. How many hectares are in Mr. ——'s plantation?
2. How many hectares are planted in cane?
3. In what month was the cane planted?
4. Is the cane in good or bad condition?
5. Has the weather been favorable or unfavorable for it?
6. Have insects or animals damaged it?
7. When will Mr. —— harvest his crop?
8. How much does he expect to get from each hectare?
9. Is this more or less than he harvested last year?
10. What is the present price of cane?

Put your report in an envelope and address it to your teacher.

Write a note, like the one below, about the conditions of crops in your town for the past month:

"The condition of abacá and coconuts is good. Rice is fair, but corn is poor. Some rice has been harvested. High water has damaged much corn."

To the Teacher: Read the chapters, "Industrial Language and Composition Work" and "Agriculture and Gardening." Let the pupils write reports of other crops raised in the community. (See page 72.)

THE TAILOR



What place is this?

What do you see on the table?

How many rolls of cloth do you see?

What are the men making?

What do you call these men?

white suit

khaki suit

dark suit

belt

buckle

button-hole

coat collar

coat pocket

trousers pocket

watch pocket

button (n. & v.)

unbutton

shirt

cuff

necktie

collar button

cuff button

coat hanger



Maximo is in the tailor's shop. He wants a new suit of clothes. He sees many rolls of cloth on the shelves. Maximo will have a white suit, because white is cool.

Here the tailor is measuring Maximo. What does he measure with?

The tailor cuts the cloth with large shears or scissors. He bastes the pieces together with needle and thread. He sews them on a sewing-machine. Do you see how he makes the sewing-machine go?

He sews the buttons on with needle and thread. Some buttons are white and some are black. What kind of buttons will Maximo have on his coat?

Here is Maximo wearing his new suit. His coat has a high collar. There are pockets in his coat and trousers. Maximo carries his pencil in his coat pocket. What else do you think he carries in his pockets?



He will try to keep his suit white and clean.

1. Does the tailor make all your clothes?
2. Who made your coat?
3. Of what is your coat made?
4. Where does the tailor get the cloth?
5. What is the color of your coat?
6. How many buttons are on your coat?
7. Is your coat like Maximo's coat?
8. How many pockets are in your coat?
9. What do you carry in your coat pocket?
10. Where do you carry your knife?
11. How much do you pay for a white suit?
12. In most parts of the world, people wear dark clothes.
Why do we wear white clothes?

Use these words in questions.

Then write statements using these words:

tailor	suit
sew	buttons
baste	coat
cloth	trousers
needle	pocket
thread	collar
sewing-machine	



Draw a picture of a pair of scissors.
Draw a picture of Maximo's coat.

Your coat will hold its shape well, if you hang it on a coat hanger.

Make a coat hanger of a bamboo strip 2.5 cm wide, as shown in this picture. The bamboo should be long enough to reach from shoulder to shoulder. Make a ring of bejuco by which to hang up the coat hanger.

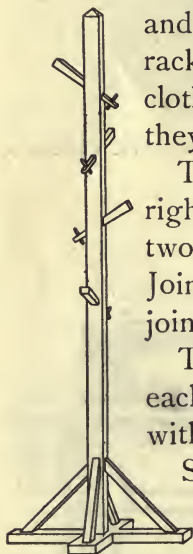


A clothes rack is useful for hanging coats and hats. Should you like to make a clothes rack for your bedroom? You can hang your clothes on it every night. In the morning they will be dry and fresh.

This clothes rack is 160 cm high. The upright is 5 cm square. The base is made of two pieces 9 cm by 55 cm and 3 cm thick. Join the two pieces together with the half joint. Mortise the upright into the base.

The upright is held secure by 4 braces, each 4 cm by 2.5 cm. Secure the braces with wooden pegs.

Study the position of the pegs in the upright. Each peg is driven into a hole through the upright. Make the holes with a chisel and mallet. Be sure that the pegs fit the holes tightly. A dowel is driven through the small end of each peg.



To the Teacher: See "Woodworking" by R. B. Blackman—"Half Joint," pages 75, 76; "Mortising," pages 77, 78; "Securing Braces," pages 82 and 83, No. 42.

TRANSPORTATION



What are these men doing with the abacá?
 Where did the abacá come from?
 How was it carried to this place?
 Where will the boat take it?
 What kind of boat is this?

wagon
 cart
 carromata
 sled
 harness
 yoke

boat
 sailboat
 ship
 launch
 casco
 lorcha

mast
 sail
 sail yard
 anchor
 rudder
 paddle



These people are going to town. Some have things to sell. They can walk fast when their loads are light.

We put heavy loads into a cart. Sometimes carabaos and horses carry loads on their backs. When the roads are good, they can go very fast.

Some people live near a river. They can carry things in bancas. Two men can paddle a banca very fast.

A prahu has sails, and the wind makes it go fast. We see larger boats on the sea than on rivers. Sailboats and steamboats carry abacá, copra, sugar, and tobacco to other countries.

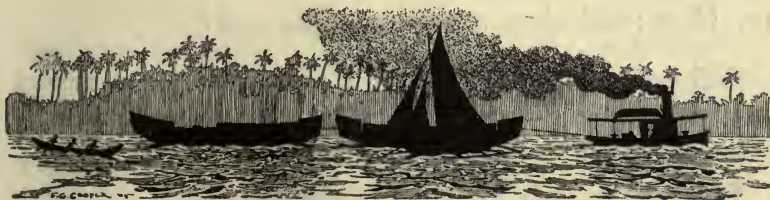
Near Manila is a railroad. Did you ever see a train of cars?





1. How do women carry loads?
2. How can men carry big loads?
3. For what do we use the cart?
4. What animal pulls the cart?
5. For what is the carromata used?
6. What animal pulls the carromata?
7. On what does the train run?
8. What pulls the train?
9. Of what use is the train?

1. How do we carry things on water?
2. What kinds of boats are on the river?
3. What kinds of boats are on the sea?
4. How do men make the banca move?
5. When can the sailboat go very fast?
6. Why can a banca not go far on the sea?
7. Where do steamboats go?
8. What kinds of boats have you seen?



Write a report about the condition of the road from your house to the schoolhouse:

1. Is the road good or bad?
2. Is it well crowned?
3. Do weeds or grass grow on it?
4. Are there holes or ridges in the road?
5. Are there loose stones in it?
6. Are there ditches on both sides?
7. Are the ditches in good condition?
8. What could you do to improve the road?
9. Who is the provincial road foreman in your town?

Write a report about the horses and carabaos in your town. Copy each question and write an answer after each:

1. How many horses are there in your town?
2. For what are they used?
3. Are many horses sick at present?
4. What is the sickness?
5. What does a good horse cost?
6. How many carabaos are there in your town?
7. How many died last month?
8. Are many carabaos sick now?
9. What is the sickness?
10. How much does a good carabao cost?

Write five questions that you could ask for a report on the following named animals: pigs; sheep; goats; chickens.

Write an answer to each question.

WASHING



Is this a river or a sea?
What is the girl doing?
What is her mother doing?
Why are the clothes on the bank?
What are the children doing?

washing clothes
washing his hands
wash myself
rinsing clothes
drying clothes
ironing clothes

toilet set
washbowl
water pitcher
soap dish
towel
towel rack





Good morning, Clara. Where are you going?

I am going to the river to wash my clothes.

Is this not a beautiful river? See how clear the water is. Look at the shady trees on the banks.

Whack! Whack! Clara beats the clothes with a big paddle. She puts soap on the clothes. The clothes will be white and clean.

Clara's mother is rinsing a coat. She rinses out all the soap and dirt. She will put the coat on the clean stones to dry.

The sun is shining brightly. Soon the clothes will be dry, and Clara will take them home.

Clara is ironing the clothes. She puts fire in the large iron. The iron must be very hot, so that the clothes will be smooth.

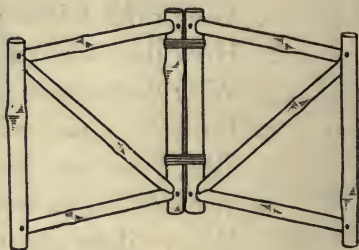


Do you know what Clara puts in the iron to make the fire burn? Where does she get the charcoal?

1. Why does Clara go to the river?
2. How does she carry the clothes?
3. Why does she wash the clothes?
4. How does she wash them?
5. Why does she beat them?
6. Why does she use soap?
7. Where does she get the soap?
8. Why does she put the clothes on the bank of the river?
9. How does Clara iron the clothes?
10. How does she keep the iron hot?
11. Why must the iron be hot?



1. What river is near your town?
2. Do people wash clothes in this river?
3. Where does the river come from?
4. How wide is the river?
5. Are the banks rocky or sandy?
6. What kinds of trees grow on the banks?
7. How deep is the water?
8. Does the water flow fast or slow?
9. Where does it go?
10. How can people cross this river?
11. What kinds of boats are on this river?



Make a washstand, water pitcher, and towel rack of bamboo. Green bamboo is best to use, because it will not break.

The cane for the washstand and pitcher should be at least 10 cm in diameter. The washstand should be high enough for you to wash yourself conveniently. Notice where the cane joint is in the washstand. In the pitcher, the joint furnishes the bottom.

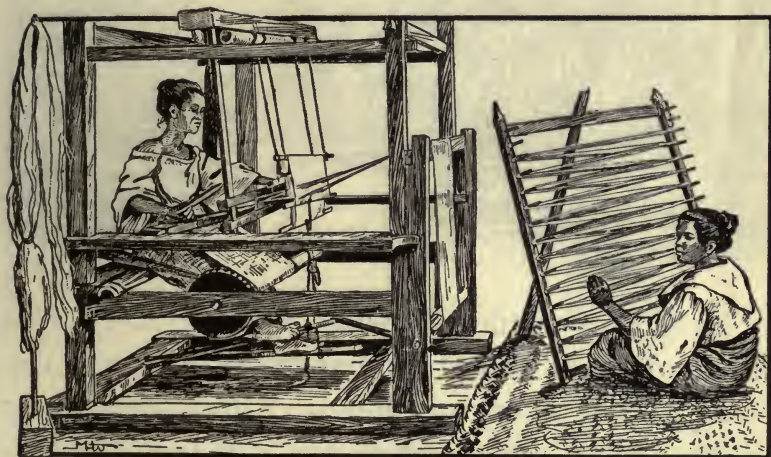
For making the washstand and the bottom of the pitcher, split the bamboo evenly. Let the splints be about one centimeter wide.

The bamboo splints of the stand and pitcher are held apart by weaving in strands of bejuco. Be sure that your washdish will fit nicely into the top of the stand, as the picture shows.

Can you bend a piece of bamboo for the pitcher handle? Fasten the handle with a weave of bejuco, as the picture shows.

The towel rack is as high as the washstand. It is made of smaller canes than the stand. Make all joints strong and neat. On page 12 you will see how good joints are made. The two parts of the rack are tied together with bejuco and fold like a screen.

WEAVING



What is the woman doing?

What is she making?

What is the name of the machine?

What do you see at the left of the picture?

What is the girl doing?

loom

reed

heddle

batten (n. & v.)

shuttle

bobbins

spool (n. & v.)

spooling machine

warp (n. & v.)

warping machine

woof

weaver's knot

fly shuttle

to and fro

over and under

cotton cloth

fiber cloth

silk goods



Here is a picture of some fiber plants. The fibers of abacá and of the banana plant are in the stalks. They are very long. Abacá has many fibers. The banana plant has not many fibers.

The fibers of maguey and the pineapple plant are in the leaves. These fibers are shorter than abacá fibers.

Pineapple fiber is very fine and strong. This fiber makes fine cloth.

In provinces where hemp grows, sinamay and pinolpog are woven.

The Ilokanos make cloth and rope of the maguey fiber. They also weave much cloth of cotton.

Jusi is made of the silk of a wild silk-worm; the silk of the cultivated silk-worm is often woven in to form stripes and figures.

The finest fiber cloths are made in Panay.

1. Name some important fiber plants.
2. Why do we call them fiber plants?
3. Describe the abacá and banana plants.
4. Where are the fibers of these plants?
5. Describe the pineapple plant.
6. Where are the fibers of this plant?
7. What other plant has the fibers in the leaves?
8. What plants have very long fibers?
9. What plant has the finest fibers?
10. For what can we use fibers?



1. Who weaves the cloth?
2. How do they weave the cloth?
3. Of what do they weave fiber cloth?
4. What is the finest fiber cloth?
5. Of what fiber is it made?
6. Of what is jusi made?
7. What cloth is made of banana fiber?
8. Of what fiber is sinamay made?
9. What cloth is made of maguey fiber?
10. What else can we weave into cloth?
11. Write the names of all the fiber cloths you know.

Weave with the loom that you made of a cigar box. (See page 28.)

For the warp, you can use strong, single fibers of abacá or maguey. You can also use several fibers twisted together or raffia. The same fibers can be used for the woof.

Weaving with warp and woof of raffia gives a pleasing design of small squares. If two colors of each warp and woof are used, patterns in squares and plaids can be woven.

With a fine warp of abacá and a woof of raffia in two colors, patterns in stripes can be woven.

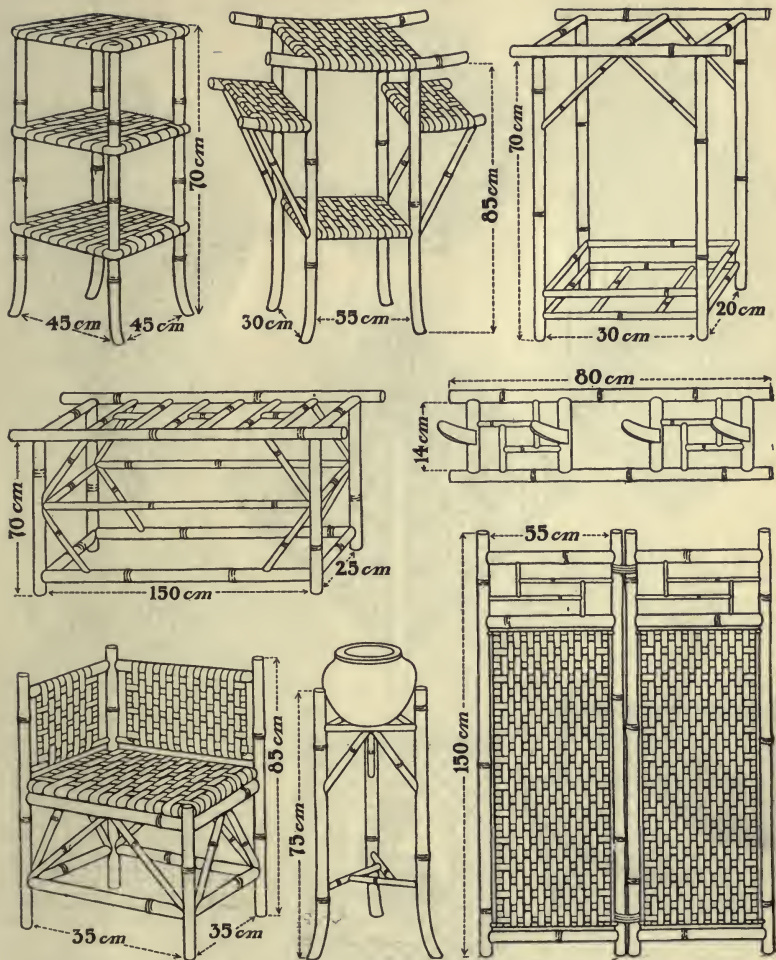
Make drawings of patterns to help you in warping your loom and in weaving.

Study the picture of the loom on page 28. To warp your loom, tie the warp to one of the end pins. Pass it through the first slit in the heddle to the pin opposite. Then pass it around the second pin and through the first hole in the heddle to the pin opposite. Continue in this way and fasten the warp to the last pin.

When the heddle is raised, all the warps in the holes are raised. Pass the bobbin with the woof between the upper and lower warps. Then lower the heddle so that the warps in the holes are below. Pass the bobbin back. Proceed in this way, till the weave is done. Every time the woof passes through, batten it firmly against the weave with the heddle.

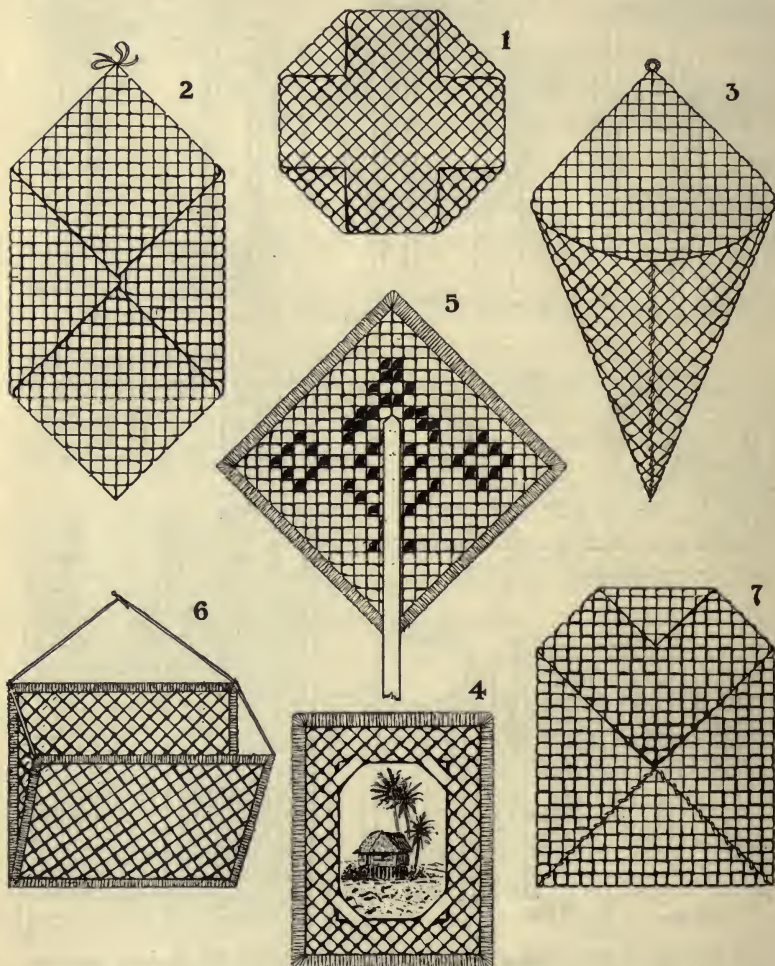
Learn to use correctly all the words that a weaver uses. Try to tell your schoolmates how to prepare a loom for weaving, and how to weave.

PLATE I



The dimensions given here need not be followed exactly; the designs may also be varied. The woven work of tables, chair, and screen may be done with abacá or maguëy. The umbrella rack to the right of the tables is adapted for the home; the one below the tables, for the school. Place tin receptacles in the bottom of the umbrella racks to catch the water.

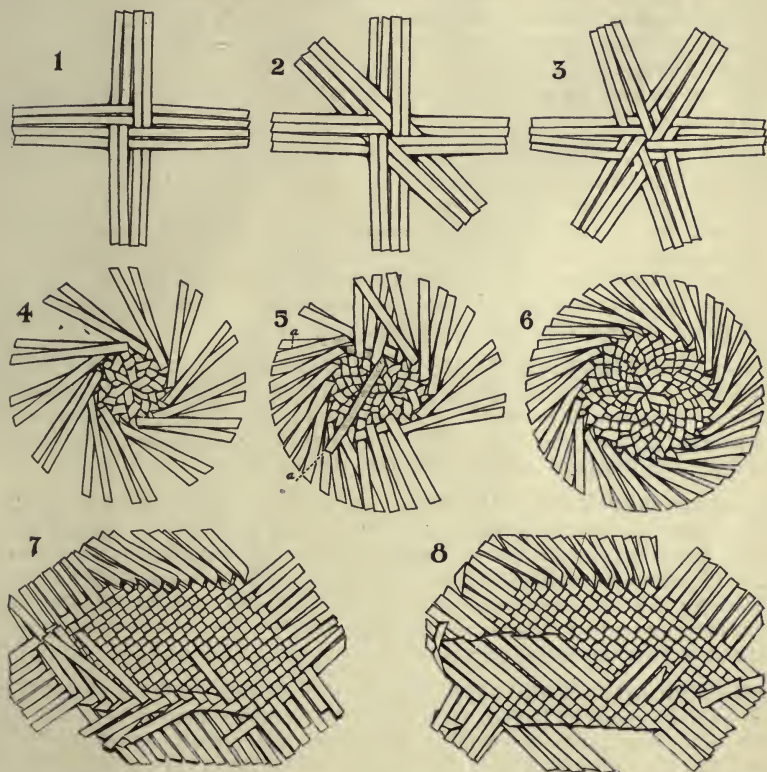
PLATE II



Nos. 1 and 4, photograph holders; No. 2, whisk broom holder; No. 3, cornucopia wall pocket for newspapers or waste paper; No. 5, fan; No. 6, wall pocket for magazines; No. 7, wall pocket for pictures, post cards, letters, etc.

EIGHT STEPS IN WEAVING A BURI HAT III

PLATE III



Step 1. Beginning top of crown with four pairs of strips. Step 2. Beginning top of crown, two pairs of strips added. Step 3. Same number of strips as in No. 2; changing weave from pairs to single strips. Step 4. Same number of strips as in No. 2; weaving first time around. Step 5. Adding a new strip (*a*). Step 6. Continuation of No. 5 after additions have been made in weaving twice around; continue weaving and adding new strips until the top of the crown is of the desired size; then continue weaving without adding new strips until the crown is sufficiently high. Step 7. The lower part of the crown, showing how the strips are turned at the lower edge to begin weaving the brim; after the strips are turned, add new strips as in weaving the top of the crown until the brim is of the required width; on account of the larger circumference of the brim, new strips are not added so frequently as in the case of the top of the crown. Step 8. Finishing the edge of the brim.

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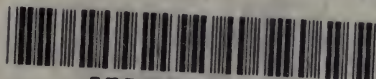
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